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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of	:	**BOX PATENT APPLICATION**
Christophe BOYER et al.	:	Examiner: Unassigned
Serial No.: Unassigned	:	Group Art Unit: Unassigned
Filed: Herewith	:	

For: DEVICE FOR SEPARATE INJECTION AND HOMOGENEOUS DISTRIBUTION OF TWO FLUIDS

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination, Applicants wish to amend the above-identified application as indicated below:

IN THE CLAIMS:

Please amend the claims as follows:

1. (Amended) Apparatus comprising a vessel and an injection device inside said vessel for carrying out separate injection of two fluids in two different physical states, or which are not miscible, and for homogeneous distribution in the vessel of at least one of the two fluids downstream of said device, the first fluid being injected into the vessel at at least one point level with said device, said device comprising a chamber (5) comprising orifices (7, 8) for the passage of the first fluid, said chamber (5) also being imperviously traversed by tubes (4) or conduits with a free end acting as a passage for the second fluid through said vessel.

2. (Amended) Apparatus according to claim 1, wherein said vessel is a distillation column in which the first fluid is essentially liquid and the second fluid is essentially gaseous, and in that said essentially gaseous fluid traverses said device from downstream to upstream via said conduits in said column, and in that the flow of the essentially gaseous fluid is upwards and the flow of essentially liquid fluid is downwards.

3. (Amended) Apparatus according to claim 1, wherein said vessel is a reactor in which at least one bed of granular solid (12) is disposed downstream of said injection device and in that the flows of the two fluids are downwards and co-current, and in that the second fluid is injected into the vessel at at least one point upstream of said device.

4. (Amended) A method according to claim 15, in which the first fluid is essentially liquid and the second fluid is essentially gaseous.

5. (Amended) Apparatus according to claim 1, wherein said device is placed close to the head of said vessel.

Please cancel claims 6 and 7 without prejudice or disclaimer.

8. (Amended) Apparatus according to claim 1, comprising tubes (4) extending below the chamber (5) by a distance h_t (10).

9. (Amended) Apparatus according to claim 8, in which said distance h_t (10) is in the range 1 to 100 mm.

10. (Amended) Apparatus according to claim 3, in which the distance between the end (13) of the tubes (4) and the top of the bed (12) is in the range 0 to about 50 mm, 0 excluded.

11. (Amended) Apparatus according to claim 1, in which said orifices allowing passage of the first fluid are holes distributed between the tubes for injecting the second fluid.

12. (Amended) Apparatus according to claim 1, in which said orifices for passage of the first fluid are annular slots located around the tubes for injecting the second fluid.

13. (Amended) A method according to claim 15, in which said vessel is a reactor and at least one bed of granular solid is disposed downstream of said device, and conducting at least one of hydrocracking, hydrotreatment, hydrodesulphurisation, hydrodenitrogenation, selective or complete hydrogenation of C_2 to C_5 cuts, selective hydrogenation of steam cracked gasoline, hydrogenation of aromatic compounds in aliphatic and/or naphthenic cuts,

hydrogenation of olefins in aromatic cuts, partial or complete oxidation reactions, amination, acetyloxidation, ammoxidation or halogenation reactions, in particular chlorination.

14. (Amended) Apparatus according to claim 1, wherein said vessel is a distillation column.

Please add the following new claims:

--15. A method of providing improved homogeneity to mixed fluids wherein a first fluid is either of a different phase from a second fluid or is immiscible with said second fluid, said method comprising injecting said first fluid into a vessel at at least one point level with an injection device disposed inside said vessel, said injection device comprising a chamber comprising bottom orifices, passing said first fluid laterally into the chamber and then out of said chamber through said orifices into the vessel, and passing said second fluid through vertical tubes or conduits positioned adjacent said chamber and out of contact with said first fluid within said chamber, and then out of said tubes or conduits into said vessel.

16. A method according to claim 15, wherein said chamber is supplied by injecting the first fluid substantially radially with respect to the principal axis of the vessel and at at least one point located level with said device.

17. A method according to claim 16, wherein the second fluid is injected substantially along the principal axis of the vessel, and the fluids constitute a gas phase and a liquid phase.

18. A method according to claim 15, said injection device comprising tubes (4) extending below the chamber (5) by a distance h_t (10).

19. A method according to claim 15, in which said orifices allowing passage of the first fluid are holes distributed between the tubes for injecting the second fluid.

20. A method according to claim 15, in which said orifices for passage of the first fluid are annular slots located around the tubes for injecting the second fluid.--

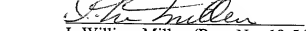
REMARKS

A principal purpose of this Preliminary Amendment is to remove the multiply dependent claims and avoid the fee associated therewith, applicant reserving the right to reintroduce claims to canceled combined subject matter.

In addition, claims to the method of using the apparatus are added.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**Version With Markings To Show Changes Made**".

Respectfully submitted,



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Version With Markings To Show Changes Made

In the Claims

The claims have been amended as follows:

1. (Amended) ~~A device that is placed in a vessel~~ Apparatus comprising a vessel and an injection device inside said vessel for carrying out separate injection of two fluids in two different physical states, or which are not miscible, and for homogeneous distribution in the vessel of at least one of the two fluids downstream of said device, the first fluid being injected into the vessel at at least one point level with said device, said device ~~being characterized in that it comprises~~ comprising a chamber (5) ~~pierced by~~ comprising orifices (7, 8) for the passage of the first fluid, said chamber (5) also being imperviously traversed by tubes (4) or conduits with a free end acting as a passage for the second fluid through said vessel.

2. (Amended) ~~A device~~ Apparatus according to claim 1, ~~characterized in that~~ wherein said vessel is a distillation column in which the first fluid is essentially liquid and the second fluid is essentially gaseous, and in that said essentially gaseous fluid traverses said device from downstream to upstream via said conduits in said column, and in that the flow of the essentially gaseous fluid is upwards and the flow of essentially liquid fluid is downwards.

3. (Amended) ~~A device~~ Apparatus according to claim 1, ~~characterized in that~~ wherein said vessel is a reactor in which at least one bed of granular solid (12) is disposed downstream of said injection device and in that the flows of the two fluids are downwards and co-current, and in that the second fluid is injected into the vessel at at least one point upstream of said device.

4. (Amended) ~~A device~~ method according to claim ~~3~~ 15, in which the first fluid is essentially liquid and the second fluid is essentially gaseous.

5. (Amended) ~~A device~~ Apparatus according to ~~any one of the preceding claims, characterized in that~~ claim 1, wherein said device is placed close to the head of said vessel.

Please cancel claims 6 and 7 without prejudice or disclaimer.

8. (Amended) ~~A device~~ Apparatus according to ~~any one of the preceding claims, characterized in that the~~ claim 1, comprising tubes (4) ~~extend~~ extending below the chamber (5) by a distance h_t (10).

9. (Amended) ~~A device~~ Apparatus according to claim 8, in which said distance h_t (10) is in the range 1 to 100 mm.

10. (Amended) ~~A device~~ Apparatus according to ~~any one of claims 3 to 9~~ claim 3, in which the distance between the end (13) of the tubes (4) and the top of the bed (12) is in the range 0 to about 50 mm, 0 excluded.

11. (Amended) ~~A device~~ Apparatus according to ~~any one of the preceding claims~~ claim 1, in which said orifices allowing passage of the first fluid are holes distributed between the tubes for injecting the second fluid.

12. (Amended) ~~A device~~ Apparatus according to ~~any one of claims 1 to 10~~ claim 1, in which said orifices for passage of the first fluid are annular slots located around the tubes for injecting the second fluid.

13. (Amended) ~~Use of a device as defined in any one of claims 1 to 12~~ A method according to claim 15, in which said vessel is a reactor and at least one bed of granular solid is disposed downstream of said device, ~~for carrying out~~ and conducting at least one of hydrocracking, hydrotreatment, hydrodesulphurisation, hydrodenitrogenation, selective or complete hydrogenation of C_2 to C_5 cuts, selective hydrogenation of steam cracked gasoline, hydrogenation of aromatic compounds in aliphatic and/or naphthenic cuts, hydrogenation of olefins in aromatic cuts, partial or complete oxidation reactions, amination, acetyloxidation, ammoxidation or halogenation reactions, in particular chlorination.

14. (Amended) ~~Use of a device as described in any one of claims 1 to 12 in~~ Apparatus according to claim 1, wherein said vessel is a distillation column.

Claims 15-20 have been added.